Claims:

1.　A behavioral biometrics-based user verification system for use with a motion-based input device, said system comprising a data interception unit for receiving inputs from a user, a behavior analysis unit operatively coupled to said data interception unit, and a behavior comparison unit operatively coupled to said behavior analysis unit, wherein said system dynamically monitors and passively collects behavioral biometric information, and translates said behavioral biometrics information into representative data, stores and compares different results, and outputs a user identity result.

2.　The user verification system of claim 1, wherein said system is suitably configured for real-time monitoring.

3.　The user verification system of claims 1 or 2, further comprising secure communication protocols operatively coupled to said data interception unit.

4.　The user verification system of any one of claims 1 to 3, wherein said data interception unit is configured to identify data from a mouse as one of movement, drag and drop, point and click, and silence, such that in use, said system receives data from a mouse.

5.　The user verification system of claim 4, wherein said data interception unit is further configured to characterize movement based on at least one of average speed, average traveled distance, and direction of movement.

6.　The user verification system of any one of claims 1 to 5, wherein said data interception unit is configured to identify actions from a keyboard on the basis of

dwell time and flight time such that in use, said system receives data from a keyboard.

7.   The verification system of claim 5 or 6, wherein said data interception unit is further configured to identify action from a mouse as one of movement, drag and drop, point and click, and silence, such that in use, said system receives data from a mouse and from a keyboard.

8.   The user verification system of claim 7, wherein said data interception unit is further configured to characterize mouse movement based on at least one of average speed, average traveled distance, and direction of movement.

9.   A method of characterizing a user comprising the steps of moving a motion-based input device, dynamically monitoring and passively collecting behavioral biometric information from said device, processing said information, and modeling said information using suitably selected algorithms to develop a signature for a user.

10.   The method of claim 9, further comprising comparing said signature with a signature of an authorized user.

11.   The method of claim 9 or 10, further comprising filtering said data after processing and before modeling to reduce noise.

12.   The method of any one of claims 9 to 11, further comprising collecting, processing and modeling said data in real-time.

13.   The method of any one of claims 9 to 12, further characterized as moving a mouse, collecting data from said mouse, processing said data, and modeling said data using suitably selected algorithms to develop a signature for a user.

14. The method of claim 13, wherein said collecting data further comprises characterizing movement based on at least one of average speed, average traveled distance, and direction of movement.

15. The method of any one of claims 9 to 14, further characterized as using a keyboard, collecting data from said keyboard, processing said data, and modeling said data using suitably selected algorithms to develop a signature for a user.

16. The method of claim 15, wherein said collecting data is further comprises characterizing movement based on flight time and dwell time.

17. The method of claim 15 or 16, further comprising collecting data from a mouse, processing said data and modeling said data using suitably selected algorithms to develop a signature for a user based on both mouse and keyboard data.

18. The method of claim 17, wherein said collecting data further comprises characterizing movement based on at least one of average speed, average traveled distance, and direction of movement.

Abstract:

The present invention provides a system and methods for computer user profiling based on behavioral biometrics. The approach consists of establishing distinctive profiles for computer users based on how they use a motion-based input device such as, but not limited to, a mouse and/or a keyboard. The profiles computed in the present invention are more accurate than those obtained through the traditional statistical profiling techniques, since they are based on distinctive biological characteristics of users.